

A1 and
This invention was made with government assistance from the Department of Energy under grant DEFG02-91-ER-45439. The government has certain rights in this invention.--

In the Claims:

Please amend claims 7 and 17 to read as follows:

A2 *5b* *5c* *5d*
7. (Amended) The method according to claim 1, wherein said metal comprises a combination of metals selected from the group consisting of Au, Pt and Pd.

A3
17. (Amended) The method according to claim 11, wherein said metal comprises a combination of metals selected from the group consisting of Au, Pt and Pd.

REMARKS

Claims 7 and 17 stand rejected under §112 as being indefinite for the use of improper Markush language. The proposed amendment has been made to address the rejection. It is believed that the claims would have been understood in their originally written form, but Applicants agree that the amended language places the claims in a better form. The scope of the claims remains the same.

Claims 1-7, 10-17, 19 and 20-21 stand rejected under §103 as being obvious in view of Russell et al., and Yoshikawa et al. The rejection is respectfully traversed.

Initially, Applicants note that the Office Action correctly identifies Russell's failure to disclose the depositing of a thin discontinuous layer of metal as part of a porous silicon formation process. This is deemed obvious in the Office Action. The Office Action concludes that Yoshikawa suggests a modification to use the depositing of discontinuous metal as part of a porous silicon formation process. No such suggestion is provided by the teachings of Yoshikawa. In addition, the overall approach of Russell is distinct enough from what is presently claimed to fail to support the position taken by the Examiner in the Office Action.

The Examiner points to the electrode 15 in Yoshikawa as corresponding to the claimed step of forming a thin discontinuous metal layer. This is incorrect. Yoshikawa's element 15 is a standard thin metal contact. The metal contact 15 of Yoshikawa plays no role whatsoever in the formation of the porous silicon in Yoshikawa. It provides no suggestion to use a discontinuous metal layer in the formation of porous silicon.

As stated in column 1, lines 19-21, the thin metal electrode is formed after the formation of the porous semiconductor layer 13. It is stated that the electron emission device "comprises a semiconductor layer 13 in a thin film metal electrode 15 which are formed in turn on a silicon layer 12". This is also emphasized in column 4, lines 58-62 where it is stated once again that the thin metal electrode is layered on the already formed porous silicon semiconductor layer 13. In Yoshikawa, therefore, the thin metal electrode is not at all part of the porous silicon formation process. Yoshikawa therefore includes no suggestion

whatsoever of using a discontinuous metal layer for the formation of porous silicon. Yoshikawa only teaches that there is porous silicon formed and then a metal contact, as is conventional in the art, is added after the formation of the porous silicon. Yoshikawa is disclosing an electron emission device in which it is common to use an ultra thin metal film, but the ultra thin metal film has nothing to do with the formation of porous silicon. Instead, the ultra thin film is added to the already formed porous silicon to improve the electron emission properties. The purpose of the thin film metal electrode 15 is summarized in column 7, lines 31-44. The examples in column 8 further confirm that the metal electrode 15 is added sequentially after the formation of porous silicon. For example, in column 8 beginning at line 35, it is stated that "a 6nm diameter thin film metal electrode of Pt was formed 6 nanometer thick on the surface of the amorphous SiO₂ layer of each substrate by sputtering".

In sum, Yoshikawa only teaches the formation of a thin film metal layer after porous silicon has been formed. If such a teaching were added to the teachings of Russell, it still does not meet the language which is claimed. The claims require the use of the thin discontinuous layer of metal before etching to produce porous silicon. Nothing in either the Russell or Yoshikawa patents suggests using a thin metal layer in the etching process to form porous silicon as is claimed in the present claims. This is required in each of independent claims 1, 11 and 21 in varying scope, but all of the claims require the deposition of metal which is then used in the etching process. Combining Russell and Yoshikawa only results in

a stain etching process and a subsequent thin film metal layer. This does not meet nor suggest the claimed invention.

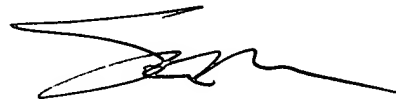
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned "Version with markings to show changes made."

For the foregoing reasons, applicant believes that this case is in condition for allowance, which is respectfully requested. The examiner should call applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The paragraph beginning on page 1, line 3 has been amended as follows:

--STATEMENT OF GOVERNMENT INTEREST

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In the Claims:

Claims 7 and 17 have been amended as follows:

8. (Amended) The method according to claim 1, wherein said metal comprises a combination of metals selected from the group consisting of Au, Pt and Pd.

17. (Amended) The method according to claim 11, wherein said metal comprises a combination of metals selected from the group consisting of Au, Pt and Pd.